UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE: November 1999
COURSE REVISED IMPLEMENTATION DATE: September 2010
COURSE TO BE REVIEWED: April 2014
(four years after UPAC approval) *(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

CIS 390	**Computer Information Systems**	**3**
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Data Communications
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:
Students will become familiar with the ideas, methods and standards being used for the electronic exchange of data, as well as a discussion of interfaces. Included will be discussions on the OSI reference model, commonly used protocols, data communication equipment, network topologies (international, national, provincial, local), network design and tradeoffs, routing protocols, performance analysis and modeling, and network and data security. Students will consider case studies of different performance measures and management requirements, so that they can effectively analyze data communication alternatives for a business problem.

PREREQUISITES: CIS 291 or CIS 295, and one of the following: MATH 106, MATH 104 with a B+ or better, CYC 425, or PSYC 110 with a B+ or better. Acceptance to CIS degree program. (Students accepted to a CIS or Computing Science minor may register with permission of the department.)
Note: CIS 291 and MATH 125 are strongly recommended, and will be required for September 2012.

COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces:
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: **45**

STRUCTURE OF HOURS:

Lectures:	**45**	Hrs
Seminar:		Hrs
Laboratory:		Hrs
Field experience:		Hrs
Student directed learning:		Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: **35**
Expected frequency of course offerings: Once per year
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☐ Yes	☐ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☐ Yes	☒ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s): **Edward Lo/Paul Franklin**

Department Head:	**Ora Steyn**	Date approved:	**January 15, 2010**
Supporting area consultation (Pre-UPAC)		Date of meeting:	**February 19, 2010**
Curriculum Committee chair:	**Edward Lo**	Date approved:	**December 9, 2009**
Dean/Associate VP:	**Dan Ryan**	Date approved:	**March 18, 2010**
Undergraduate Program Advisory Committee (UPAC) approval		Date of meeting:	**April 23, 2010**

LEARNING OUTCOMES:
Upon successful completion of this course, students will:

1. Understand and describe the data network control protocols.
2. Define and explain the techniques of flow control and error control.
3. Understand and describe the principles of circuit-switching and packet-switching networks.
4. Understand and explain various routing protocols and strategies.
5. Understand the concepts of congestion control.
6. Design and analyze Frame Relay networks.
7. Understand and explain ATM networks.
8. Design and analyze Local Area Networks.
9. Understand and explain network security and encryption techniques.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Lecture with hands-on lab exercises in class.

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☒ Examination(s) ☒ Portfolio assessment ☒ Interview(s)

☐ Other (specify):

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:
[Textbook selection varies by instructor. An example of texts for this course might be:]

Data and Computer Communications, 8th Edition, William Stallings, Pearson Prentice Hall, Inc., 2007.

SUPPLIES / MATERIALS:

STUDENT EVALUATION:
[An example of student evaluation for this course might be:]

Participation	5%
Assignments	15%
Project and lab	10%
Midterm exam	25%
Final exam	45%

COURSE CONTENT:
[Course content varies by instructor. An example of course content might be:]

1. Introduction and overview - OSI Reference Model, TCP/IP protocols
2. Data Link Control - Principles of Flow Control, Principles of Error Control, High-Level Data Link Control, Other Data Link Control Protocols
3. Wide Area Networks - circuit-switching networks, switching networks, Routing in circuit-switched Networks
4. Packet Switching - Principles of packet-switching, Routing in Packet-switching, Congestion Control, X.25
5. Frame Relay - Principles of Frame Relay Protocol Architecture, Congestion Control of Frame Relay
6. ATM (Asynchronous Transfer Mode) - Principles of ATM protocol Architecture - ATM Cell Structure, Transmission of ATM cells, ATM Traffic and Congestion Control
7. LAN (Local Area Networks) - LAN architecture, Bus/Tree LANs, Ring LANs, Star LANs, Wireless LANs
8. LAN Systems - Design of Ethernet Networks, Design of Token Ring Networks, Design of ATM Networks
9. Internetworking - Principles of Bridge Operations, Routing with Bridges, Principles of Switch Operations
10. Network Security - Security Requirements and Attacks, Conventional Encryption and Decryption, Public-Key Encryption